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Topic: Gait Recognition through MPCA plus LDA

Abstract: This paper solves the gait recognition problem in a multilinear principal component analysis (MPCA) framework. Gait sequences are naturally described as tensor objects and feature extraction for tensor objects is important in computer vision and pattern recognition applications. Principal component analysis (PCA) operates on vectors and has difficulty in dealing with tensor objects. This work introduces an MPCA framework for tensor object feature extraction by seeking a multilinear projection onto a tensor subspace to explain as much the variances of the original tensors as possible with lower dimensionality. A tensor object recognition system is proposed with discriminative tensor feature selection, followed by LDA. In experiments, MPCA is applied to gait recognition with the novel EigenTensorGait representation. The results show that with a simple design, the proposed algorithm outperforms the state-of-the-art algorithms.

Biography: Konstantinos N. (Kostas) Plataniotis received his B. Eng. degree in Computer Engineering from the University of Patras, Greece in 1988 and his M.S. and Ph.D. degrees in Electrical Engineering from Florida Institute of Technology in Melbourne, Florida, in 1992 and 1994 respectively. He is an Associate Professor with The Edward S. Rogers Sr. Department of ECE at the University of Toronto in Toronto, Ontario, Canada. His current research interests include signal and image processing, communications systems, adaptive learning systems and biometrics.

Dr. Plataniotis is a registered professional engineer in the province of Ontario, and a member of the Technical Chamber of Greece. He served as the IEEE Toronto Section 2004/05 Chair and the Technical Program Co-Chair for ICME 2006. He is an Associate Editor for the IEEE Trans. on Neural Networks, the IEEE Signal Processing Letters and the image processing Area Editor for the IEEE Signal Processing Society's e-letter. He is a member of the IEEE TAB Committee on Biometrics and a Guest co-Editor of the special issue on "Advanced Signal Processing and Pattern Recognition Methods for Biometrics" of the Applied Signal Processing Journal.

Dr. Plataniotis is the 2005 recipient of IEEE Canada's Outstanding Engineering Educator Award and the co-recipient of the 2006 IEEE Trans. on Neural Networks Outstanding Paper Award for the paper " Face Recognition Using Kernel Direct Discriminant Analysis Algorithms" (Juwei Lu, Konstantinos N. Plataniotis and Anastasios N. Venetsanopoulos, IEEE TNN, Vol. 14, No. 1, 2003).